

REMARKS

In the sole interest of moving this application towards allowance, Applicant has amended claims 1, 3, 5, and 7 by raising the lower limits of the Ni and Cr contents as suggested by the Examiner. Applicant has also narrowed claims 5 and 7 by replacing the term "and/or" with the word "and." No new matter has been introduced.

The amendments have been made to comply with the Examiner's recommendation or to more particularly point out and distinctly claim the subject. **The amendments should be entered as they raise no new issues that will require further consideration or search and also do not touch the merits of the application within the meaning of 37 C.F.R. § 1.116(b).**

Claims 1-8 are currently pending. Reconsideration of the application, as amended, is respectfully requested in view of the remarks below.

I

The Examiner rejected claims 1 and 3 under 35 U.S.C. § 103(a) as being obvious over Scarlin et al., U.S. Patent No. 5,415,706 ("Scarlin").

Claims 1 and 3 are drawn to martensitic stainless steel compositions. Each of them, as amended, recites a composition containing, among others, Ni (2.0-6.0 wt.% in amended claim 1 or 2.0-4.5 wt.% in amended claim 3) and Cr (13.0-19.0 wt.% in amended claim 1 or 13.0-16.0 wt.% in amended claim 3).

Scarlin discloses a steel composition containing 0.05-2.0 wt.% Ni and 8.0-13.0 wt.% Cr. According to the Examiner, a martensitic stainless steel composition covered by claims 1 and 3 can be distinguished from that described in Scarlin if it contains no less than 2.0 wt.% Ni and no less than 13.0 wt.% Cr. See the Office Action, page 2, lines 23-25. Thus, claims 1 and 3, amended pursuant to the Examiner's suggestion, are no longer rendered obvious by Scarlin.

Further, Applicant has demonstrated that five steel compositions containing over 2.0 wt.% Ni and 13.0 wt.% Cr were found to possess high mechanical strength. See the Specification, Table 2, Examples 2-6. More specifically, each composition described in Examples 2-6 possesses a yield strength greater than 98 Kg/mm^2 ($\cong 960 \text{ N/mm}^2 = 960 \text{ MPa}$), about 20% higher than that of composition A (797 MPa) disclosed in Scarlin (which contains

less than 2.0 wt.% Ni and less than 13.0 wt.% Cr; see column 4, lines 25-26, and 46). Given these unexpected results, amended claims 1 and 3 are clearly not rendered obvious by Scarlin.

II

The Examiner rejected claims 5 and 7 under 35 U.S.C. § 103(a) as being obvious over Scarlin.

Claims 5 and 7 are drawn to methods of manufacturing the claimed martensitic stainless steel. Each of them, as amended, recites a steel composition containing, among others, 2.0-6.0 wt.% Ni and 13.0-19.0 wt.% Cr.

The Examiner pointed out that “[t]o select the tempering temperature[,] would be a matter of routine optimization depending on desired strength, toughness and ductility desired, which is well within the skill of the artisan and productive of no new and unexpected results.” See the Office Action, page 3, lines 6-9. Applicant disagrees.

Each of claims 5 and 7 bases its patentability, at least in part, on manufacturing martensitic stainless steel that is not obvious over Scarlin, and is therefore not rendered obvious by Scarlin. In any event, even if a *prima facie* case of obviousness has been made, it can be successfully rebutted by unexpected advantages of tempering the steel at a temperature of 350-575°C, a limitation required by claims 5 and 7. Specifically, martensitic stainless steel treated at a tempering temperature of 350-575°C possesses higher mechanical strength than that treated at a tempering temperature of greater than 575°C. See Figure 1 of the Specification. One skilled in the art would not have been motivated by Scarlin, which does not disclose a tempering temperature lower than 780°C, to manufacture martensitic stainless steel at a tempering temperature of 350-575°C. Applicant submits that, given these unexpected results, claims 5 and 7 are not rendered obvious by Scarlin.

III

The Examiner rejected claims 2, 4, 6, and 8 as being obvious over Scarlin as applied to claims 1, 3, 5, and 7 above, and further in view of the English abstract of Japanese Patent No. 402217444A (“JP ’444A”).

Claims 2 and 4, dependent from claims 1 and 3, respectively, cover martensitic stainless steel compositions that further contain 0.8 wt.% Ti and 1.0 wt.% Ta. Claims 6 and 8, dependent

from claims 5 and 7, respectively, cover methods of manufacturing martensitic stainless steel that further contains 0.8 wt.% Ti and 1.0 wt.% Ta.

JP '444A discloses a steel composition containing, among others, V, Nb, Ti, and Ta. It is the Examiner's position that "it would be obvious to incorporate Ti and/or Ta into the Scarlin in view of JP '444A because Ti and Ta are chemically equivalent to V and Nb which are already taught by the prior art and therefore could be used interchangeably." See the Office Action, page 3, lines 10-13. Applicant disagrees.

Claims 2, 4, 6, and 8, dependent from claims 1, 3, 5, and 7, respectively, base their patentability on the use of no less than 2.0 wt.% Ni and no less than 13.0 wt.% Cr, not on the use of Ti and Ta. JP '444A only teaches a composition containing, among others, V, Nb, Ti, and Ta. It fails to cure the deficiency in Scarlin. Thus, a combination of Scarlin and JP '444A also does not render claims 2, 4, 6, and 8 obvious. In other words, claims 2, 4, 6, and 8 are not rendered obvious by Scarlin and JP '444A for the above-stated reasons and facts (i.e., unexpected results). See Parts I and II, *supra*.

CONCLUSION

Applicant submits that the grounds for rejection asserted by the Examiner have been overcome, and that claims 1-8, as pending, define subject matter that is non-obvious. On this basis, it is submitted that all claims are now in condition for allowance, an action of which is requested.